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Volume 8, Number 10

ORVILLE L. FREEMAN
Secretary of Agriculture

Agricultural Marketing Service
S. R. SMITH, Administrator,

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Cover Page

Seeds are grown in the laboratory to tell whether they are of the quality and variety indicated on the label. Bernard Leese, who heads the Seed Testing Section in USDA's Agricultural Marketing Service, demonstrates how garden beans and corn were grown in temperature and humidity controlled facilities to test the seeds for accuracy of labeling. Testing of seed is done in administration and enforcement of the Federal Seed Act by AMS and the 50 cooperating States.

This Federal-State cooperation is furthered through seed schools (see story on pages 8 and 9), which make an important contribution to uniform interpretation of laboratory tests throughout the country. It is all part of the job of assuring farmers and homeowners that the seed they buy will develop into good crops, good gardens, and good lawns.

Editor, MILTON HOFFMAN
Assistant Editor, JAMES A. HORTON

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Artificial Lighting for Grain Inspection

By James E. Grunig

REMEMBER the time you bought a new suit of clothes and found it did not seem the same color when you took it out in the sunlight? If so, you can sympathize with grain inspectors who must make precise determinations about the color of the seed only to have that color change under a different light source or background color.

Grain inspectors are striving for uniformity in their work, so they have agreed to examine all grain under natural "north sky" daylight, and their offices are located so such light is available. But today, so much grain is handled for both domestic and export use that grain inspectors work at all times of the day and night and are forced to use artificial light.

However, different types of artificial

light make the grain appear slightly different. Inspectors divide grain into subclasses based on very small differences in color and texture, so even a small change in light can cause a large error in classing. For instance, they place wheat into one of seven classes and subclasses, spot off-colored wheat kernels, and detect weathered or stained grains in oats and barley. They also use color to grade soybeans, edible beans, field peas, rice, and other grains.

With the importance of lighting in mind, marketing researchers C. H. Kingsolver, J. N. Yeatman, R. A. Boller, and J. A. Thompson, of USDA's Agricultural Marketing Service set their sights on the problem and came up with two significant findings. They discovered that a special mixture of fluorescent and incandescent lighting resulted in more accurate grading and that pastel-colored backgrounds, complementary to the color of the grain, also made grading easier.

The light source work was centered around an artificial lamp that gave off approximately north sky daylight. Although an accurate light source, the lamp was too large and expensive to be practical. So the AMS researchers compared four inexpensive lighting

sources with the accepted source to see if any of them would be more practical and efficient.

Besides the special fluorescent and incandescent combination, researchers tested a combination of daylight, cool white, and blue fluorescent lamps; cool white fluorescent lighting; and daylight fluorescent. They conducted the study by asking panelists to compare and match colored chips resembling wheat—one chip under the standard lamp and the other under one of the test lamps. In a large number of comparisons, panelists made consistently accurate choices only when they used the special combination of fluorescent and incandescent lighting. They consistently failed to place the chips correctly under the other three light sources.

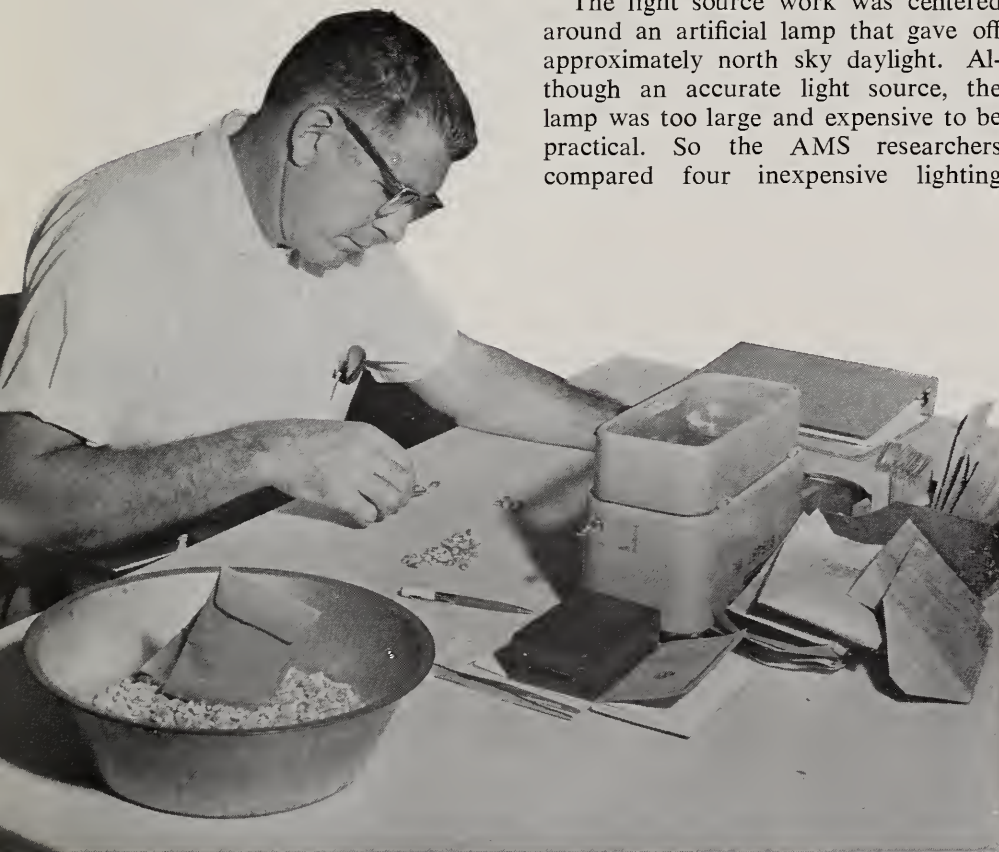
Switching from light sources to backgrounds, the marketing researchers asked skilled grain inspectors to classify wheat using black, grey, brown, yellow, red, green, blue, and buff-colored backgrounds. Here they discovered inspectors could grade more accurately with pastel-colored backgrounds than with the buff-colored plastic material that is now standard.

As a result of this study, AMS is installing the new light source in each Grain Division district office and has indicated the need for considering a different background color than the buff. Using a standardized light source and background color, grain inspectors in stations throughout the country will be able to make more uniform grading judgments.

Marketing research has made it possible for grain inspectors to do more accurate work, knowing their eyes aren't deceiving them.

For more information on the study, write the Office of Information, USDA, Washington, D. C., 20250, and ask for "Backgrounds and Artificial Lighting for Standardized Grain Inspection," (MRR-606).

(This article was written by James E. Grunig, a senior at Iowa State University. At that time, Mr. Grunig was a student assistant in the Marketing Information Division, AMS.)





Vedat Bellik "gets the feel" of the teletypewriter at the Federal-State market news office at Macon, Ga. He worked with Federal-State market reporter at the peach markets in middle and southern Georgia.

A MAN WITH A MISSION

By Ted Hightower

VEDAT BELLIK, Assistant Director of Information for the Turkish Ministry of Agriculture, with headquarters at Ankara, is a man with a mission.

His fervent hope is that one of these days farmers and tradesmen in his native Turkey may have a market news service on a variety of farm products similar to that provided daily to American farmers and interested trade groups by the U. S. Department of Agriculture's Agricultural Marketing Service, in cooperation with State departments of agriculture.

To accomplish this in Turkey, Bellik says, will take a lot of time and work. Borrowing an American phrase, he states: "You see, we shall have to start from scratch."

So, when he returns to Turkey he plans first to set up a market news service on peaches, and after that expand the service to cover other fruits and vegetables.

Mr. Bellik has been in this country since August 1962. His nation, with the help of The Agency for Interna-

tional Development, sent him to the United States, as he puts it, "to observe and study market news activities of the Agricultural Marketing Service and to help my country organize, and operate, a market news system within the Ministry of Agriculture for fresh fruits and vegetables.

"We have nothing now in our country that compares with your market news service," Mr. Bellik continued. "But in my travels and my studies in your country I've picked up a lot of 'know how' that should be of great help to me when I return to Turkey and begin work on setting up a market news service on peaches."

Mr. Bellik, obviously impressed with the large variety of agricultural commodities covered in AMS market news, and with the 19,000 mile teletypewriter system that interconnects all of the market news offices, is fully aware that it did not develop overnight.

"I've studied the history of your market news, and while in Louisiana with the Federal-State market news reporters, I had the privilege of visiting Hammond, La., where a lot of strawberries

are grown and marketed. That's the place where your first market news report was issued back in 1915. It was on strawberries, and marked the beginning of your present market news service."

Another thing that has impressed him is the speed with which market news in America reaches farmers and others who have a vital stake in the marketing of farm products.

"You people have developed what seems to be a most effective system for getting the market reports quickly to your farmers and others," Mr. Bellik said. "Your market news reporters get their daily reports to news media, such as newspapers, radio, and television, immediately after the reports have been prepared so that this news will go out fast. In a number of cities, where your market reporters are located, they have daily radio broadcasts, and at Atlanta I observed that many market reports are relayed as soon as received over your teletypewriter system to the news services which quickly send them on to their newspaper, radio, and television clients throughout the Southeast."

Mr. Bellik's schedule since his arrival in the United States has been a busy one. He first consulted with AMS officials in Washington, then attended a special course in marketing and agricultural economics at Ohio State University.

Following the marketing course, he met with foreign students of other nations to discuss mutual marketing problems at the Center for Continuing Education on the campus of the University of Georgia at Athens.

His indoctrination period at an end, Mr. Bellik wanted to get down to work. He considers his next assignment vital to his mission. As he put it, "I feel that my next step in my study of market news activities was the most important of all, for it gave me an opportunity to visit personally with market news reporters in the field, and to work closely with them as they went about their daily work of reporting on the marketing of fresh fruits and vegetables."

He began his tour of field offices of the Federal-State market news service covering shipping points with a visit to Pompano Beach, Fla., where he worked with the Federal-State reporter. From there, he visited Federal-State market news offices at Belle Glade, Lakeland, and Sanford, Fla.; Baton Rouge, La.; and Macon, Ga. He also visited such large terminal fruit and vegetable markets as Atlanta, Chicago, Cleveland, and New York.

His last stop, at Macon, Ga., was a visit he prizes highly. "I feel that this visit with Federal-State market news reporter Jack Selby, and my opportunity to observe the important peach belt, the market news service, and Federal-State inspectors at work with the help

of C. B. Brantley, Supervising Inspector, was among the most important steps I've taken, since peaches will probably be the first commodity on which we set up a market news service in Turkey," Mr. Bellik said.

Mr. Bellik demonstrated his intense interest in learning all aspects of market news operations during his visit at Macon. The slightly-graying young man from Ankara told the reporter he wanted to "observe what you are doing and work with you, and visit orchards and packing plants to learn all I can about the peach market."

Messrs. Selby and Brantley obliged, and among the many trips they made with Mr. Bellik was one to Avondale, Ga., where Mr. Bellik spent a full day at the side of Federal-State Inspector Garland Adams at one of Georgia's largest peach packing sheds.

As he finished his busy schedule and prepared for the trip back to Washington for final consultation with AMS marketing specialists, Mr. Bellik said of the market news service in general: "I have noticed that market news is of great help to industry—producers, processors, packers, and others. My talks with industry representatives make me feel that these people are making good use of market news services. I also feel that the Federal-State market news service employs well-trained, qualified reporters at the terminal markets and shipping points I visited. All of them establish a good working relationship with all segments of the marketing trade. I believe that such relationship is very important if any market news is to be successful.

"To do a good job," he continued,

"the market newsman must have the full cooperation of those within the industry. The market news reporter must be a skilled technician, and a good business man who can talk the language of those in the marketing trades."

Mr. Bellik's tentative plans call for conducting a survey in his native land to find out where market news offices are most needed, the best ways to organize a market news service, and to undertake efforts to gain the cooperation of the produce industry in Turkey.

Mr. Bellik says he will "sure be glad to get home to my family." He looks forward with much anticipation toward the day when he will have that reunion with his wife, Saadet, and their two children—an 11-year-old son, Semih, and a 6½-year-old daughter, Gulay.

But before he can enjoy that big homecoming, Vedat Bellik has more travel ahead. After leaving the United States, he will make a 2-month tour of marketing operations in Western Europe, with stops in England, Germany, Denmark, and Holland.

A busy schedule? Indeed so. Vedat Bellik is—and has been—a busy man. But he likes it that way. "After all, I have a mission to perform—a mission vital to my country. To do it well, I must give it my full attention, and learn all I can."

To this end, he feels he has been successful. He says he has gained valuable information for his country during his American visit, which will serve him well when he returns to his native Turkey.

(Mr. Hightower is a staff member of the Marketing Information Division, Southeast Area Office, Agricultural Marketing Service, Atlanta, Georgia.)

Fresh Georgia peaches are inspected for quality by Federal-State inspector Garland Adams as Bellik watches how it is done.



Market news reporter Jack Selby explains the sizing process for peaches to Vedat Bellik at a packing shed near Macon, Ga.



Bagging Citrus Fruit

Machines Compare Three Mechanical Methods of Filling Polyethylene Film Bags

By James E. Grunig

IN the last three years, more and more citrus fruits have been shipped in consumer-size polyethylene bags. The bags have brought added convenience to shoppers, but have also brought a challenge to marketing researchers in the U. S. Department of Agriculture's Agricultural Marketing Service.

Their challenge is to find the most economical method of counting and bagging the fruit. In a recent study, AMS researchers, in cooperation with the Florida Agricultural Experiment Station, studied three mechanical methods and compared them with a conventional hand-counting and hand-bagging method.

Their research showed that a medium-size plant could use most economically a new method currently in use by the Florida citrus packinghouse that developed it. This "channel-fill" bagger features a section of channels similar to a rain gutter on the edge of a building roof.

Presized fruit rolls into the channel until it is filled, guaranteeing a certain amount of fruit. A worker holds a bag under the end of the filled channel and presses a lever to release the fruit into the bag. He repeats this operation with a second channel while fruit is again rolling into the first. Finally, the worker sets the open bag on a conveyor which takes it to a bag-closing machine.

For a small operation, the researchers found that hand-counting and hand-bagging is still the most economical of

the methods studied. Here a worker holds the bag with one hand, counts the fruit, and places it in the bag with the other hand. Each worker then closes and tapes the bag with a hand-taping device and places it in a large master container.

A second mechanical method—using the electronic count-fill bagger—was the most economical for a very large operation. The operator sets a dial prescribing the number of fruits to be placed in each bag. The machine operator then holds a bag under a spout and presses a foot switch which signals the machine to automatically count out the fruit required for the prescribed weight and drop it into the bag.

The final mechanical device studied weighs the fruit as it is dropped into the bag. The operator of this machine fastens a bag to a hopper attached to a scale. Fruit drops into the bag until a desired weight is reached, signaling an automatic cut-off switch to stop the flow of fruit. Here, each worker tends two hoppers, as with the channel method.

A mechanical fruit-sizer served all bag-filling machines in each method studied. It insures uniform fruit size in each bag and allows the operator to change the size of fruit going into the bags. The channel-fill bagger requires an additional small resizer for the bagging crews.

The researchers recommend different methods for the large and small plants

because equipment costs increase as the process becomes more mechanized. For example, equipment costs for the count-fill and weigh-fill methods are highest, and, therefore, are economical only for a large plant where the savings in labor cost more than offset the additional equipment cost. However, the count-fill method is recommended because it yields 500 to 625 bags per hour while the weigh-fill method yields only 313 to 380 bags per hour.

The channel method is less productive than the count-fill method (441 bags per hour), but the equipment costs are lower. Thus, it is more economical for the average-sized plant.

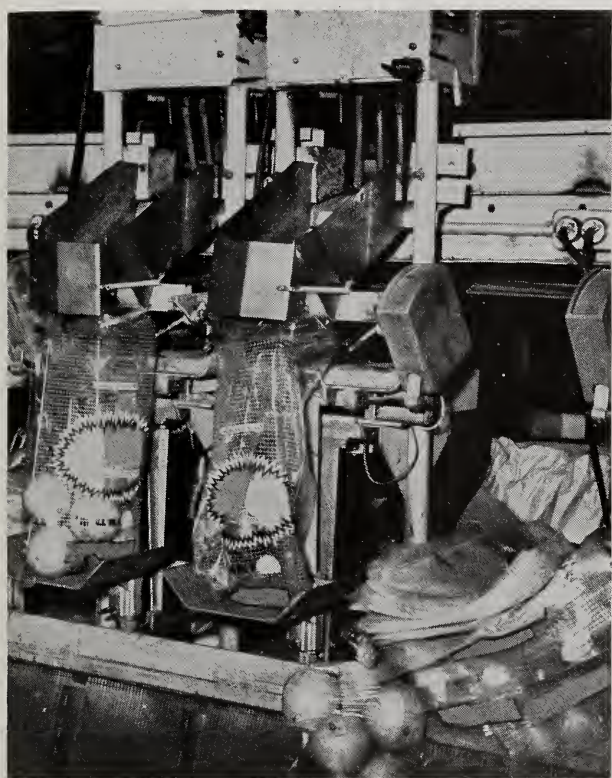
When mechanized baggers are used, an automatic taping machine also closes the bags. Only one operator is needed to guide the bags through the taper. Then, for each bagging crew, another two workers remove the taped bags from the conveyor and pack them into master containers.

A report describing these methods is available from the Marketing Information Division, Agricultural Marketing Service, USDA, Washington, D. C., 20250. Ask for AMS-503, "Filling Polyethylene Film Bags with Citrus Fruit."

(The author was a summer trainee in the Marketing Information Division, Agricultural Marketing Service, when this story was written. He is now a senior technical journalism student at Iowa State University.)



Above, the "count-fill" method. An operator sets dial prescribing number of fruits for each bag, then holds bag under a spout and presses a foot switch signaling machine to automatically count the fruit required for prescribed weight and drop it into bag. Machine fills 500 to 625 bags per hour but is costly. Recommended for large plants.



Left, the "weigh-fill" method. Fruit is weighed mechanically as it is dropped into the bag which is fastened to a hopper attached to a scale. When desired weight is reached, flow is automatically cut off. Method yields 313 to 380 bags per hour but equipment cost is expensive.

Below, the "channel-fill" method. Presized fruit rolls into channels. After channel is filled, fruit is released into bag, filling 441 per hour. Equipment costs less than for other two methods. Recommended for medium-size plants. Hand-counting and hand-bagging found most economical for small plants.

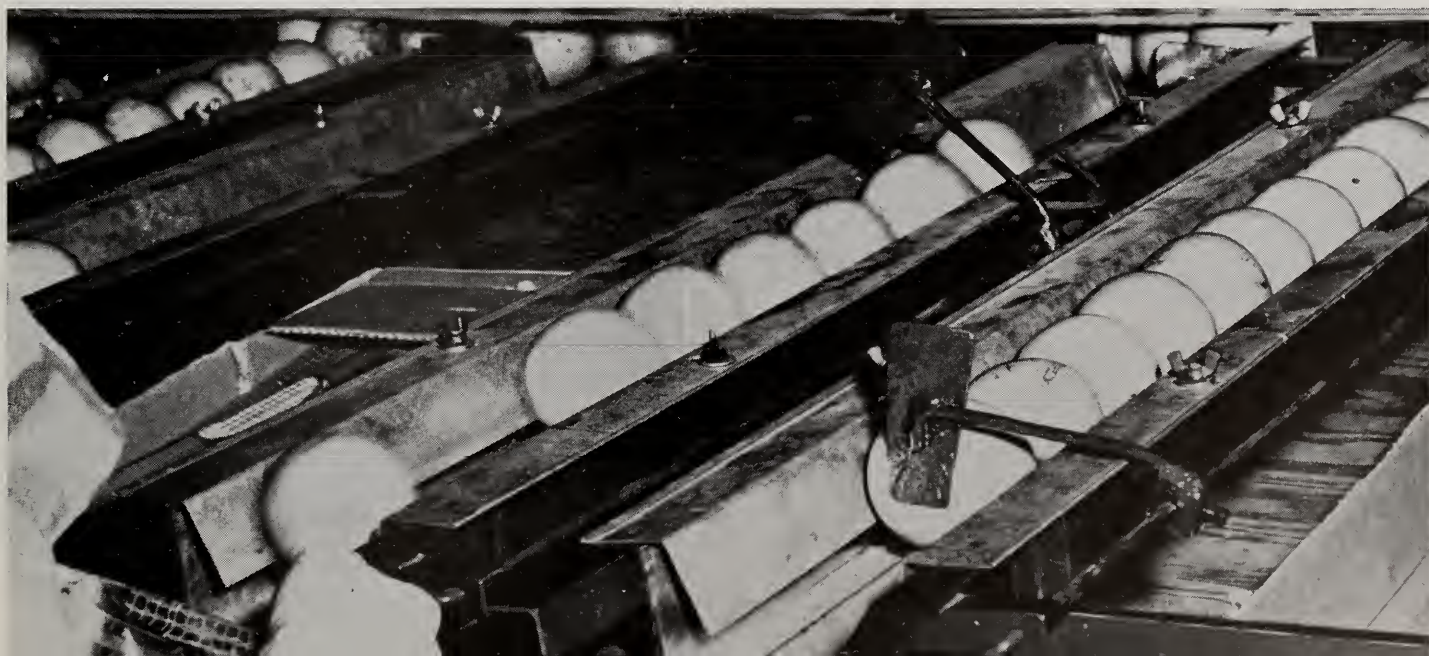




Photo BN-19645—Student Marion Messick of the Federal-State Seed Laboratory, Sacramento, Calif., uses binocular microscope and transmitted light to test for inert material in sample of Merion Kentucky bluegrass.



Photo BN-19644—Student Gerry Lindahl, seed analyst with the Halsey Seed Laboratory of Halsey, Ore., uses a hand lens as an aid in solving problems of identifying seeds of three species of fescue and one specie of ryegrass.



Photo BN-19646—Seed school instructor Vera Colbry checks sample of seed brought in by student, to confirm identification. The student said that a farmer had harvested seed of a volunteer stand of bluegrass, thinking it was seed of Kentucky bluegrass. However, upon examination by an analyst of the commercial seed laboratory, it was learned that the seed represented a weedy kind of bluegrass, *Poa palustris*, known as fowl bluegrass.

“School Days” Again for Seed Analysts

Photo BN-19651—Practice in identifying certain kinds of crop and weed seeds was included in the seed school course. Here, instructor Colbry checks bluegrass seed identification of student Jessie Stevens of Germain's Seeds, Inc., Fresno, Calif.



Photo BN-19647—A group of students listens as instructor Colbry explains upright rolled towel and comparative soil methods of testing garden bean seeds for germination. In instructing this working group, Miss Colbry points out various types of seedling abnormalities, in classifying seed which show mechanical damage from processing.



SCHOOL bells rang again for 25 commercial and State seed analysts who attended the Federal-State seed school in Corvallis, Oregon, last May.

In a busy two-week session, the students were informed of up-to-minute methods of making germination and purity tests on seeds and were coached in identifying species of seeds that are difficult to recognize.

Practical exercises formed the core of the curriculum.

The school was sponsored by the Seed Branch of the Agricultural Marketing Service's Grain Division, U. S. Department of Agriculture, in cooperation with the State of Oregon. It was held at Oregon State University.

Typical of seed schools conducted periodically by AMS, in cooperation with various States, the Corvallis school was geared to the tremendous advances constantly being made in the field of seed testing.

Seed schools are doing much to bring about greater uniformity in tests between analysts and to improve equipment and methods of testing in laboratories.

Through this, the schools are aiding the administration and enforcement of the Federal Seed Act and State seed laws, which protect farmers and consumers in assuring them that the seed they buy is of good quality and properly labeled.

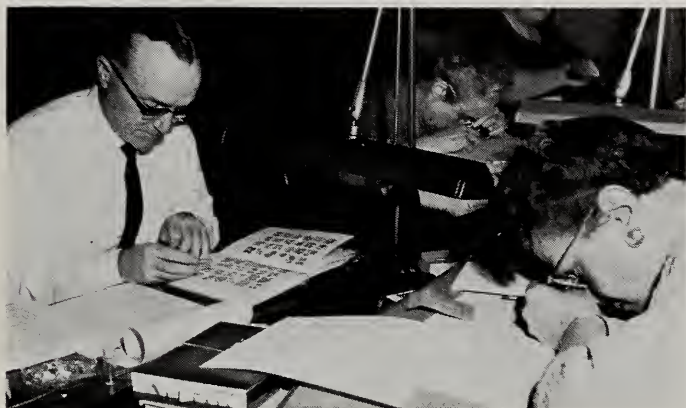


Photo BN-19653—Students Thomas Hackett of Asgrow Seed Co., Twin Falls, Idaho, and Alta Curry of Monmouth Cooperative Warehouse, Monmouth, Ore., examine seeds and compare them with illustrated and written descriptions. Here, Thomas Hackett compares an unknown noxious-weed seed with picture in a USDA handbook. Alta Curry studies seeds of three species of fescue and one specie of ryegrass, and compares them with distinguishing features listed on typed sheet.

Photo BN-19652—Three students observe as instructor Colbry (right) demonstrates roll towel and soil methods of testing germination of safflower seed. Seeds of this oil crop are easily injured during processing, so germination must be carefully checked. Students (left to right) are Frances Henderson of the Yakima Seed Laboratory, Yakima, Wash.; Mary Tarr of the Northrup King & Co., Boise, Idaho; and Thomas Hackett of the Asgrow Seed Co., Twin Falls, Idaho.



Photo BN-19654—Other students among the 25 commercial and State seed analysts attending the seed school. These students are working on seed identification problems.



Photo 19656—The instructor checks a student's identification of seed of one of the wheat grasses, Agropyron. Here, Miss Colbry examines the noxious-weed seed, Agropyron Repens, commonly known as quackgrass, which is difficult to tell from certain Agropyron crop seeds.



Photo BN-19648—Students busily work on seed identification problems. Several are using binocular microscopes, an important tool to analysts in identifying seeds.



Photo BN-19643—Seed school instructor Vera Colbry (seated) demonstrates methods of testing ryegrass seed for germination and also fluorescence, which is a means of distinguishing between two kinds of ryegrass. Miss Colbry, of the Seed Branch of the AMS Grain Division, explains methods to (left to right) Eve Pyfer of the Northrup King and Co., Albany, Ore.; Marian Messick of the Federal State Seed Laboratory, Sacramento, Calif.; and Noella Laliberte of Jenks-White Seed Co., Salem, Ore.

TWO TEAMS—ONE GOAL

USDA's Agricultural Marketing Service and the Milwaukee Dairy Council work toward common objective—increased use of milk and dairy products.

By Doris Walter Laber and Arthur Broadwin

SCUFFLING feet . . . laughing voices . . . an occasional, "Hey, what's for lunch?"

Just seconds after the bell for first lunch echoes through John Marshall Junior-Senior High School, students are flocking into the cafeteria. Seconds later, almost one in three sits down with a Type A lunch—a protein rich food, at least two fruits and/or vegetables, bread, butter, and a half-pint of fluid whole milk.

And, what is for lunch? This particular day, could be: turkey a la king on fluffy white rice, sweetpotatoes with pineapple, cranberry salad mold, homemade roll with butter, peanut butter cookie, and milk.

Milwaukee Public Schools, according to Thomas J. Farley, Director of School Lunch, serve only Type A lunches—no a la carte. Milwaukee, he says, is one of the very few large school systems to do this. Their reasoning is that one lunch, with no choices, makes it possible to serve faster, simplifies making change, and guarantees each student the opportunity to become acquainted with new foods in a balanced meal.

Behind this successful operation of a school lunch program lies the backing of at least three large "companies," both government and private. These include the U. S. Department of Agriculture's Agricultural Marketing Service, the Dairy Council of Milwaukee, and the local school system.

The Dairy Council of Milwaukee is one of a nationwide network of similar units in large milk marketing areas, all

affiliates of the National Dairy Council. Their objective, in the interest of public welfare, is the promotion of good nutrition practices (for better health and well-being of citizens)—with the increased use of milk and dairy products as the natural outcome.

AMS believes programs helping to improve the diets of the Nation's children not only will teach them good food habits, but also help to broaden the food markets of the future, while improving distribution of our abundance now.

LET'S take a look now at some results seen in Milwaukee's schools. Every meal served in the public school system is accompanied by a half-pint carton of milk. Because schools are reimbursed by USDA only for meals sold with milk, consumption is watched closely. Less than 1 percent of the students refuse milk.

Every noon, milk and ice cream are offered for those who carry a lunch from home. Butter is placed on every tray. And every meal served includes either donated commodities, or plentiful foods, or both.

As cook-manager of John Marshall, Miss Sophie Czubkowski handles all food ordering, supervises other lunchroom workers, and has some leeway in varying menus. From behind-the-scene she has watched school children develop new tastes in foods and become more aware of balanced diets.

For example, she says, the first few times they were offered, crisp golden cookies made with corn meal were

pushed aside and not eaten. Now, if they're not on the menu at least once a week, students want to know when they are going to be served again—"We haven't had those cookies in a long time!"

Sweetpotatoes, at first eyed with suspicion, are becoming more popular. Milwaukee children were unfamiliar with this typically Southern food. The key to this change is combining the "sweets" with something the students do know and like, for example, pineapple.

Turkey, Mr. Farley reports, at one time was served only twice a year. Now it is on the menu twice a month, thanks to USDA food distribution efforts. And, incidentally, it takes 16 tons of turkey to fill the school lunch order each time it's served.

School kitchen staffs, says Mr. Farley, are shown the values of using milk, dairy products, and plentiful foods in on-the-job training. All city civil service employees are reached through regular meetings, periodic workshops, and publications.

Nutrition in the classroom as well as the lunchroom, is an important goal of both the Milwaukee School Lunch Program and the Dairy Council. The Council offers background material for both parts of the educational system.

They provide, for example, information and speakers to the School Lunch Program for help with training the lunchroom staffs. And, they offer handbooks, workbooks, films, and other educational material for use in classrooms.

Edwin Schmidt, secretary-treasurer of the Dairy Council and executive sec-

retary of the Milwaukee Cooperative Milk Producers, reports that the major expenditure of the organization is for educational materials for schools. Official local educational organization of the dairy industry, the Dairy Council is sponsored and supported by milk producers and handlers who serve the Milwaukee market. Producer support is through two cooperatives, the Milwaukee Cooperative Milk Producers and the Golden Guernsey Dairy Cooperative.

The board of directors, elected from the membership of milk producers and handlers, sets policies and approves budgets for Dairy Council operations. Mrs. Gladys Hayes of the Golden Guernsey organization is president of

the Dairy Council of Milwaukee.

Trained and experienced staff members carry out the Council's objectives. On the professional side, Miss Judith Hage heads a three-woman staff. All graduate home economists, Miss Hage and her assistants offer trained consultant service in developing health and nutrition programs for all ages.

Leaflets, booklets, posters, films, and other visual aids are backed by research in nutrition and health education provided through the National Dairy Council. This material, produced in cooperation with leaders in government, professional, educational, and consumer fields, is offered to schools, civic and educational groups, and government agencies.

In a central kitchen where lunches are prepared for several Milwaukee schools, Mrs. Constance Schwab, a supervisor for school lunch programs, Milwaukee, and Miss Judith Hage, executive director, Dairy Council of Milwaukee examine cookies made with U.S.D.A.-donated corn meal and lard as basic ingredients.



The Cooperative Extension Service, for example, is a regular recipient and user of Dairy Council and other educational material. As one Milwaukee County agent commented, in expressing appreciation for this, "It's so hard to get good, solid, colorful, reliable material—not promoting one specific food or product."

Home Demonstration Agent Barbara Rice leans heavily on Dairy Council material in helping to teach low-income families to budget for food and plan for better nutrition. Mrs. Rice uses both Council and AMS information to illustrate just what makes a balanced diet, why it's important, how to do it economically, etc.

Mrs. Rice finds Dairy Council food models handy visual aids for planning menus. These models promote better nutrition through the basic four food groups—meat, fruits and vegetables, bread and cereals, and milk and dairy products. She also uses the AMS Plentiful Foods List, especially prepared for large-scale feeding operations, for advising on food budgeting.

LAST YEAR the Council recorded effective use of nutrition education materials through more than 750 leader conferences, other meetings attended by 2,500 individuals, correspondence, phone calls, and professional meetings. In other accomplishments, Milwaukee reported arranging 10 radio and TV shows promoting use of dairy products and providing exhibits, which emphasize the role of dairy products in a well-balanced diet, to schools and other institutions. The Dairy Council also kept health leaders abreast of research developments through periodical publications.

Always available when needed, is the AMS's Milk Marketing Administrator of the Federal Milk Order for Milwaukee. He observes and cooperates with the Council in its self-help program. Both the Dairy Council and the administrator are interested in stronger, more orderly markets for milk and other dairy foods.

Milwaukee's boast of a low milk surplus may well be at least partly due to these and similar Federal-community Dairy Council efforts. Who knows, milk, too, may make Milwaukee famous!

(Mrs. Laber is an information specialist in the Marketing Information Division's Midwest Area at Chicago. Mr. Broadwin is the National Dairy Council's Director of Agricultural Relations.)

THE PRODUCT EXAMINATION SERVICE FOR MEAT

By John B. Dennison

WHEN Secretary of Agriculture Orville L. Freeman recently opened an exhibit commemorating the "Golden Anniversary of Marketing" within USDA, he said, "... in the last 50 years we have witnessed a miracle in marketing. Without it, we could not today make the proud statement that our citizens spend a smaller percentage of their income for their food than any other people in the world. Without it, we could not eat strawberries in January—consider fresh fruits and vegetables as year-round staples—and depend on finding whatever kind of food we fancy awaiting us at the supermarket, whenever and wherever we want it."

The "Golden Anniversary" exhibit highlighted and explained many of the services provided the Nation's agricultural industry by USDA's Agricultural Marketing Service—services which have helped to bring about that "miracle of marketing" the Secretary mentioned.

Neither the marketing system, nor the marketing services which keep the "wheels" turning, are quite so glamorous as a 22-orbit space flight or the prospects of landing a man on the moon. Some of the marketing services are so routine, in fact, that they have come to be taken for granted by the very people who use them.

Probably one of the least known marketing services is the Product Examination Service for red meat administered by the Meat Grading Branch of AMS's Livestock Division. The Service has been used only half a dozen times in the last 18 months.

It was requested and is supported by the meat industry, and is available to all segments of the industry—from packing plant to retail warehouse. The cost of the service is borne in each case

by the person or company using it.

The Product Examination Service serves as a protective measure for the buyer, the seller, and the man who transports the meat between the two. Here's how it works:

Suppose, for example, a trucker has hauled a load of beef from a packing plant in Omaha to the plant's customer—let's say a jobber in Chicago. When the trucker reaches his destination and starts to unload his cargo, the customer may decide he doesn't want to accept the product. He may claim that the refrigeration equipment in the truck is faulty and that the meat has not been kept properly refrigerated during the long haul. Or he may claim that the meat has been improperly handled and as a result is dirty or otherwise damaged. What's the trucker to do in such a case? He could, of course, dump the load on the customer's unloading dock and drive away, but his chances of getting paid for the delivery would probably be pretty slim.

There's another, better way to settle the question. The trucker can call the nearest office of the Meat Grading Branch and request the Product Examination Service. A Federal meat grader will examine the shipment and issue an official certificate on such physical characteristics of the meat as its state of freshness or freeze, its cleanliness, or the extent of any damage which may exist. This certificate does not by itself force acceptance or rejection of the product, but the trucker can present the certificate as evidence of the physical condition to support his contention that the trucking company is not at fault.

Now let's look at the same situation from a slightly different point of view. Suppose the customer for the shipment of meat has ordered it from a packing company by telephone—a rather pre-

valent practice in today's modern meat marketing. Suppose when the shipment arrives, the customer refuses to accept the product but this time blames the packer for the poor physical condition of the shipment. He may call the packer and flatly refuse to accept the shipment. The packer claims that the shipment was in good condition when it left his plant 2 days earlier. If he wants an impartial determination of the condition of the product, all the packer has to do is call the Meat Grading Branch and ask for Product Examination Service. Again, the Federal meat grader will examine the shipment and issue an official certificate of his findings.

As in the first case, the certificate alone does not settle the dispute. But if the product is in satisfactory condition, the certificate is strong evidence in supporting the packer's case. On the other hand, if the certificate shows the product to be unsatisfactory, it is strong evidence supporting the customer's rejection of the meat.

The Product Examination Service is certainly not one of the most spectacular of marketing services. But it is one that is valuable to all segments of the meat industry—so valuable that industry asked for its reinstatement after the Meat Grading Branch did away with the service several years ago because there were so few calls for it.

Members of the Meat Grading Branch believe they receive few calls for the service because buyers and sellers tend to carefully consider the validity of their respective claims before subjecting such a claim to the impartial judgment of a Federal meat grader.

(The author was a student assistant in the Marketing Information Division, Agricultural Marketing Service, when this article was written. He is now a senior journalism student at the University of Minnesota.)



Employee in potato packinghouse protects sponge-rubber, absorbent rolls by covering them with polyethylene sheet.

Suds Soften Potato Sponges

By Robert A. Ries

WHEN hard, cracking sponges boosted costs for potato packagers, marketing researchers in the U. S. Department of Agriculture's Agricultural Marketing Service attacked the problem with detergent, water, and a phenol-and-water solution and, as a result, found another way to reduce marketing costs.

These sponge-rubber, absorbent rolls are the essential part of a machine that dries potatoes after they come from a washer. Such drying prevents wet potatoes from smearing packages and ruining the product's customer appeal. The inch-wide sponges are mounted side by side on a steel roller. Twelve of these rollers, mounted together, revolve and sponge the potatoes dry as they move across the rollers.

New sponges can easily be stored without deterioration, but the rubber hardens and cracks after they have been used and then stored for the usual 8- to 10-month period. When the hardened rollers are in motion again, bits

of rubber fly off, and most of the sponges must be replaced.

The packager pays 50 cents for each of the 30 sponges on a roller—a total of \$15 for each roller in the device. This cost, like all other marketing costs, is ultimately reflected in the prices consumers pay for food. Wherever there's a chance to hold down these costs, AMS marketing researchers try to develop lower-cost handling methods.

In this case, AMS researchers tried several methods of preserving the sponges, but only one—a detergent-water solution—kept the sponges soft and prevented them from breaking down during the normal rubbing action. Sponges immersed in the solution and stored in an air-tight container were still soft and usable after 14 months in storage.

The researchers didn't find such good results from the other solutions and processes they tried, however. They soaked the sponges with water, squeezed them, and stored them in an open container and also a closed container. They also immersed sponges in

water alone and in a water-and-phenol solution, storing both samples in a closed container. All of these sponges crumbled when they were returned to use.

The AMS men then applied the results from individual sponges to the sponges while they were mounted on the drying machine. The researchers placed a polyethylene film between the sponge-covered rollers and the steel rollers beneath. They poured a sudsy detergent and water solution over the sponges and then drew the polyethylene over the top of the rollers and tucked it under the edge to keep the moisture inside.

The sponges were still soft and pliable after several months' storage. They immediately were returned to work without any soaking or preparation to soften them. These softened sponges represented a substantial saving in marketing costs—and also gave the consumer a dry, well-packaged product.

(The author is an industrial engineer of the Transportation and Facilities Research Division, AMS.)

Color as a Measurement of Cotton Quality

By Harvin R. Smith

(The following article is a condensation of a paper presented before the American Cotton Congress, Dallas, Texas, July 12, 1963.)

AS FAR as can be determined, color has been used as one of the primary factors of cotton quality from the very beginning of commercial trading in this commodity. Throughout the years, color measurement has been primarily a matter of judgment by cotton classers.

The art of classing cotton is supposed to have started with a Liverpool cotton broker by the name of Joshua Holt, sometime between 1775 and 1785.

As early as 1808 such descriptive terms as "good," "middling," "ordinary," and "stained" were being used in England. In America, in the early 1800's, cotton was still classified largely by area of growth. Upland cotton was referred to by such terms as "Texas Blacklands," "Benders," "Peelers," "Rivers," "North Georgias," and "Canebreakers." In 1860 some production areas had only two classifications, "good" and "sorry."

When the New Orleans cotton exchange was organized in 1871, grade terms were being used which were almost identical to those in use today. The grade descriptions used by the New Orleans Exchange, however, were not the same as those used in other exchanges and inland markets. There was still considerable confusion in the trade regarding the use of those grade terms.

Little progress was made in standardizing grade descriptions throughout the trade until 1907, when the International Cotton Congress held a meeting in Atlanta, Georgia, and passed a resolution favoring the adoption of new cotton standards for "grade and color." As a result, in 1909, a committee that consisted of "nine men, prominent in vari-

ous branches in the cotton trade, and three experienced classers from the New York, New Orleans, and Dallas markets," met in Washington, D. C., and approved nine grades of white cotton. These nine grades represented the first standards adopted by the U. S. Department of Agriculture (USDA).

Thus, color has been considered to be an important element in cotton quality for over two hundred years, and the classer's eye has been the primary method of color measurement. Even today, the classer is still the most widely used means of judging the color of cotton. However, human judgment does have its shortcomings. While the eye is exceptionally sensitive to small *differences* in color, it is not so good at judging *absolute* color levels.

Anyone who has gone out to buy paint to match the wall at home—without taking along a sample or chip of the desired color—has experienced this. The classer, with a good standard to guide him, can do a very good job of matching color, for here he is concerned with viewing color differences. It is in the preparation of the standard itself, where the problems of judging absolute color levels arise, that the classer needs help.

IN 1927, Dorothy Nickerson, presently head of the Standardization Section of the Agricultural Marketing Service's Cotton Division, USDA, was assigned the job of developing ways and means of putting cotton standards on a scientific basis through the use of instrument measurements. The first instrument devised to measure cotton color was the disk colorimeter. This was an optical device and the measurements depended largely upon the judgment and skill of the operator.

The disk colorimeter was used until 1950, when it was replaced by the Nickerson-Hunter Cotton Colorimeter.

This electronic instrument was developed especially for cotton. It was accurate and "self standardizing," but not suitable for what we now call "high-speed" testing. A more sensitive and sophisticated model of the Nickerson-Hunter Cotton Colorimeter was built in 1959.

This instrument now comes in a transistorized model, and is fully capable of measuring thousands of samples per day. It is also adaptable to the "print-out" systems which are necessary for modern high-speed testing.

The feature that distinguishes these instruments as cotton colorimeters is the grade diagram used with them. This diagram was developed by the U. S. Department of Agriculture and is based on measurements of the Universal Standards for grade of American Upland Cotton. These measurements are directly related to the fundamental colorimetric measurements which were used in calibrating the scales of a master instrument located in the Washington, D. C., laboratory of the Cotton Division. We also have developed diagrams for American-Egyptian cotton, and for cotton linters.

The cotton colorimeter is very accurate and precise. It should be pointed out, however, that the colorimeter measures the *average* color of the sample presented to it. Therefore, it does not tell whether a sample is spotted or uniform in color, or whether a sample is heavy or light in leaf content. Although these factors affect the color readings, their interpretation still remains a matter of judgment. Nevertheless, because of the instrument's precision, we can now hold the color levels of the cotton used in the grade standards to very narrow tolerances.

Color measurements can be used in several ways to determine cotton quality. Of primary importance is the effect of cotton color on processing or on the

manufactured product. Color is particularly important as a measure of how well the yarn or fabric will bleach or dye.

Color measurements can also be used to control the color of blends and mixes at the mill. Color control at this point will eliminate much of the variations in gray, bleached and dyed yarns or fabrics. But color control of blends at the mill is not a simple matter. For example, blending equal portions of samples of different colors does not result in a color which is intermediate between the two; the blend always measures closer to the darker color.

Studying color changes and their causes in cotton is another beneficial way of using color measurements. In one study, bolls of cotton which opened on the same day were identified. Then samples were picked each week for 27 weeks and measured. Twenty-seven weeks is much longer than cotton is usually allowed to remain in the field before harvesting, but the results showed that the color of the cotton becomes progressively darker as the weeks go by.

WHEN cotton is killed prematurely by frost or drought, the result is usually a yellowing of the affected fibers. The pigment in such cotton fibers is a dark yellow color. Therefore, the more of these fibers that are present in a bale of cotton, the yellower and darker it appears. Such cottons are described as light spotted, spotted, tinged, or yellow stained depending upon the amount of the yellow fibers present in the sample.

Another yellowing effect occurs when ginned cotton lint is held in storage. The amount of yellowing which occurs depends upon the temperature, humidity, and the length of time the cotton is stored. In general, the higher the temperature and humidity, the faster the color will change (the yellower it will get).

In the Cotton Division, color measurements are used in several ways.

1. To maintain the uniformity and a constant level of color in the production of grade standards.

2. To study relationships between the color, leaf, and preparation factors in grade standards as compared to these factors as they exist in current crops. Such studies form the basis for testing the validity of the grade standards and point up areas where improvements are needed.

3. To aid cotton classers in maintaining a constant level of grade classification.

Aside from the measurement of color itself, and the effect of color on the end product, color is indicative of other factors in cotton which are usually associated with it. There is an expected high correlation between color and grade; a slight correlation between yellowness and micronaire reading; more correlation between reflectance and fiber strength, and a considerable degree of relationship between the color of cotton and its waste and trash content as measured by the Shirley Analyzer.

The better the cotton, the higher the grade. The yellower it is, the lower the micronaire reading. The brighter the cotton, the higher the fiber strength. The darker the cotton, the higher the water content.

There are other less tangible relationships between various fiber proper-

ties and cotton color. Some of these are very difficult to measure and perhaps there are others which we cannot now measure at all. Such factors as fiber length, sugar content, acid alkaline value, and certain forms of biological damage all seem to be related, more or less, to cotton color.

In summary, cotton color is a very important measure of cotton quality. This is shown by the fact that color has been a primary factor of grade for well over 200 years. It is important not only for the effects of color itself as shown by the color of the manufactured product, but also for the many fiber properties associated with color that exert a significant influence on processing performance or on the quality of resulting product.

(The author is a cotton marketing specialist, Cotton Division, AMS.)

Stanley C. Radermaker (right), Director, Cotton Division, Agricultural Marketing Service, and Tommy Carnes, a staff member of the Division, are pleased with the Cotton Division's exhibit in the USDA Patio in Washington, D. C. The occasion was part of the observance of the 50th anniversary of marketing work in the Department of Agriculture. The instrument shown in the background is a micronaire. It is used to determine fineness of cotton fibers by use of airflow instruments.



OFFICIAL BUSINESS

Door "Snugger" Prevents Potato Freeze

WHEN subzero weather hits the Red River Valley area of the United States, potato growers often find it difficult to prevent potatoes from freezing in storage warehouses.

So, to keep the spuds a little snugger, marketing researchers in USDA's Agricultural Marketing Service, at the Red River Valley Potato Research Center in East Grand Forks, Minn., have developed an improved over-center door "snugger" to seal the large sliding warehouse doors tightly.

The snugger—a special type of latch—takes advantage of a heavy pull and large mechanical advantage to seal the

12- by 12-foot doors tightly against the door casing.

Also, the snugger is designed to leave enough room between the handle and door casing so the warehouseman doesn't emerge with skinned or pinched hands. The snugger can be constructed easily from scrap iron, plow bolts, bushings, and lag screws.

The tight seal is possible when the latch is hooked in the door catch, and the warehouseman pulls the handle completely around until it is stopped by a small pin. The door then is sealed tightly, so the heat stays in the warehouse, the freezing air stays out, and

the potatoes stay snug.

A slotted mounting bracket allows the warehouseman to adjust the tension on the door catch by loosening the lag screws fastening the bracket to the door casing and sliding the snugger back and forth. Four snuggers are usually needed to seal a large door and two for a smaller shipping-room door.

Thus, a rather simple device, designed by AMS researchers, can help conquer the sub-zero cold of the Red River Valley—and any other area subject to cold weather—and prevent potatoes from freezing—a gain for both potato producers and consumers.

Snugger position just before engaging door catch.



Snugger in the closed position.

